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Magical thinking about Ballot-Marking-Device contingency plans

JULY 21, 2022 BY ANDREW APPEL LEAVE A COMMENT

The Center for Democracy and Technology recently published a report, "**No Simple Answers: A Primer on Ballot Marking Device Security",** by William T. Adler. Overall, it's well-informed, clearly presents the problems as of 2022, and it's definitely worth reading. After explaining the issues and controversies, the report presents recommendations, most of which make a lot of sense, and indeed the states should act upon them. **But there's one key recommendation in which Dr. Adler tries to provide a simple answer, and unfortunately his answer invokes a bit of magical thinking. This seriously compromises the conclusions of his report. By asking but not answering the question of "what should an election official do if there are reports of BMDs printing wrong votes?", Dr. Adler avoids having to make the inevitable conclusion that BMDs-for-all-voters is a hopelessly flawed, insecurable method of voting. Because the answer to that question is, unfortunately, there's *nothing* that election officials could usefully do in that case.**

BMDs (ballot marking devices) are used now in several states and there is a serious problem with them (as the report explains): "a hacked BMD could corrupt voter selections systematically, such that a candidate favored by the hacker is more likely to win." That is, if a state's BMDs are hacked by someone who wants to change the result of an election, the BMDs can print ballots with votes on them different from what the voters indicated on the touchscreen. Because most voters won't inspect the ballot paper carefully enough before casting their ballot, most voters won't notice that their vote has been changed. The voters who *do* notice are (generally) allowed to "spoil" their ballot and cast a new one; but the substantial majority of voters, those who don't check their ballot paper carefully, are vulnerable to having their votes stolen.

One simple answer is not to use BMDs at all: let voters mark their optical-scan paper ballots with a pen (that is, HMPB: hand-marked paper ballots). A problem with this simple answer (as the report explains) is that some voters with disabilities cannot mark a paper ballot with a pen. And (as the report explains) if BMDs are reserved just for the use of voters with disabilities, then those BMDs become "second class": pollworkers are unfamiliar with how to set them up, rarely used machines may not work in the polling place when turned on, paper ballots cast by the disabled are distinguishable from those filled in with a pen, and so on.

So Dr. Adler seems to accept that BMDs, with their serious vulnerabilities, are inevitably going to be adopted—and so he makes recommendations to mitigate their insecurities. And most of his recommendations are spot-on: incorporate the cybersecurity measures required by the VVSG 2.0, avoid the use of bar codes and QR codes, adopt risk-limiting audits (RLAs). Definitely worth doing those things, if election officials insist on adopting this seriously flawed technology in the first place.

But then he makes a recommendation intended to address the problem that if the BMD is cheating then it can print fraudulent votes that will survive any recount or audit. The report recommends,

> Another way is to depend on voter reports. In an election with compromised BMDs modifying votes in a way visible to voters who actively verify and observe those modifications, it is likely that election officials would receive an elevated number of reported errors. In order to notice a widespread issue, election officials must be monitoring election errors in real-time across a county or state. If serious problems are revealed with the BMDs that cast doubt on whether votes were recorded properly, either via parallel testing or from voter reports, election officials must respond. **Accordingly, election officials should have a contingency plan in the event that BMDs appear to be having widespread issues.** Such a plan would include, for instance, having the ability to substitute paper ballots for BMDs, decommissioning suspicious BMDs, and investigating whether other machines are also misbehaving. Stark (2019) has warned, however, that because it is likely not possible to know how many or which ballots were affected, the only remedy to this situation may be to hold a new election.

This the magical thinking: "election officials should have a contingency plan." The problem is, when you try to write down such a plan, there's nothing that actually works! Suppose the election officials rely on voter reports (or on the rate of spoiled ballots); suppose the "contingency plan" says (for example) says "if x percent of the voters report malfunctioning BMDs, or y percent of voters spoil their ballots, then we will . . ." Then we will what? Remove those BMDs from service in the middle of the day? But then all the votes *already cast* on those BMDs will have been affected by the hack; that could be thousands of votes. Or what else? Discard all the paper ballots that were cast on those BMDs? Clearly you can't do that without holding an entirely new election. And what if those x% or y% of voters were *fraudulently* reporting BMD malfunction or *fraudulently* spoiling their ballots to trigger the contingency plan? There's no plan that actually works.

Everything I've explained here was already written down in "**Ballot-marking devices cannot ensure the will of the voters**" (2020 [**non-paywall version**]) and in "**There is no reliable way to detect hacked ballot-marking devices**" (2019), both of which Dr. Adler cites. But an important purpose of magical thinking is to avoid facing difficult facts.

It's like saying, "to prevent climate change we should just use machines to pull 40 billion tons of CO_2 out of the atmosphere each year." But there is no known technology that can do this. All the direct-air-capture facilities deployed to date **can capture just 0.00001 billion tons**. Just because we *really, really want* something to work is not enough.

There is an inherent problem with BMDs: they can change votes in a way that will survive any audit or recount. Not only is there "no simple solution" to this problem, there's no solution period. Perhaps someday a solution will be identified. Until then, BMDs-for-all-voters is dangerous, even with all known mitigations.

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